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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,515	04/07/2005	Takenobu Sunagawa	Q86666	5345

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EXAMINER

BERNSHTEYN, MICHAEL

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/530,515	SUNAGAWA ET AL.	
	Examiner	Art Unit	
	Michael Bernshteyn	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. This Office Action is in response to the Amendment filed January 27, 2006. Claims 1 and 2 have been amended; claims 6 and 7 have been added. In view of the Amendment, claim rejection under 35 U.S.C. 102(b) is withdrawn.
2. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.
3. Claims 1-7 are now pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Watanabe et al. (U. S. Patent 6,447,913) in view of Lane (U.S. Patent 4,034,013).

With regard to the limitations of claims 1-3, Watanabe discloses a thermoplastic polyester resin composition, wherein a thermoplastic polyester resin (A) is compounded with **1-25% by weight** (in the total composition) of impact resistance rendering materials (B), 0.1 to 15% by weight (in the total composition) of silicone compound and/or a fluorine compound (C), 1-50% by weight (in the total composition) of an inorganic filler (D), and 0.1-10% by weight of at least one polyfunctional compound (E) selected from the group consisting of an epoxy compound, an isocyanate compound and a carboxylic acid dianhydride. A molded article has anti-stress properties even in weld part thereof (abstract).

Examples of the polyester resin used as the component (A) are condensation polymerization products between a diol and a dicarboxylic acid such as **polyalkelene terephthalates** are preferably used, and **polybutylene terephthalates and copolymers** principally containing them are most preferably used. A mixture comprising two or more polyester resins mentioned above may be used (col. 3, lines 14-17).

Typical examples of impact resistance rendering materials (B) include thermoplastic elastomers and **core-shell polymers**. The thermoplastic elastomers is a generic term for polymeric substances, which is a solid exhibiting rubber-like elasticity at ordinary temperature but fusible with thermoplastic resins because the viscosity is reduced with an aid of heat. **Addition of the component B leads to decrease in the internal stress generated in the resin, which makes it possible to inhibit the development of cracks in alkaline solutions.** Accordingly, the component be is essential. The kinds of the thermoplastic elastomers are not particular limited and examples thereof include olefins, styrenes, polyesters, polyamides and urethanes (col. 3, lines 34-48).

Of the olefin elastomers, **grafted copolymers** can be suitably used wherein ethylene/alkyl unsaturated carboxylate copolymers (a-1) or olefinic copolymers prepared by α -olefins and glycidyl ester of α,β -unsaturated acids (a-2) are chemically bonded with one or two or more of polymers or copolymers mainly composed by repeating units in the form of a branched or crosslinked structure (col. 3, lines 60-67).

Such **graft copolymers** have a particular effect of improving the resistance against alkaline solutions and particularly suitably used as the impact resistance rendering materials. Examples of the ethylene/alkyl unsaturated carboxylate copolymers (a-1) include random copolymers such as ethylene/acrylic acid copolymers, ethylene/methacrylic acid copolymers, ethylene/acrylic acid/ethyl acrylate copolymers, ethylene/ethyl acrylate copolymers, ethylene/vinyl acetate copolymers and

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ethylene/ethyl acrylate/vinyl acetate copolymers, and furthermore, mixtures of these copolymers can be used (col. 4, lines 18-28).

α -Olefins, that are one side of monomers forming the olefin copolymers (a-2), include ethylene, propylene and butane-1, and ethylene is preferably used. The glycidyl esters of α,β -unsaturated acids that are the other side of the monomers forming the component (a-2) are compounds, which include glycidyl acrylate, glycidyl methacrylate and glycidyl ethacrylate, and in particular **glycidyl methacrylate** is preferred (col. 4, lines 29-38). The suitable composition of the segment (a-2) consists of 70 to 99% by weight of α -olefins and 30 to 1% by weight of glycidyl esters of α,β -unsaturated acids (col. 4 lines 49-51).

Polymers or copolymers (b) that are subject to **graft polymerization** with the olefin copolymers (a-1) or (a-2) are the following: poly(methyl methacrylate), poly(ethyl acrylate), poly(butyl acrylate), polystyrene, polyacrylonitrile, **acrylonitrile/styrene** copolymers, **butyl acrylate/ methyl methacrylate** copolymers and **butyl acrylate/styrene** copolymers (col. 4, lines 52-63).

Watanabe discloses that in the **graft copolymers** the olefin copolymers of the aforesaid (a-1) or (a-2) or polymers or copolymers of (b) are not to be separately used. The feature of graft copolymers is to have a branched or crosslinked structure where the copolymers (a-1) or (a-2) and the polymers or copolymers of (b) are chemically bonded together at least at one point. **Such graft structure exerts a remarkable effect that cannot be attained by singly blending (a-1), (a-2) or (b).** Herein, the **ratio**

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of (a-1) or (a-2) to (b) to compose the graft copolymers is suitably from **95:5 to 5:95** in weight (col. 4, line 66 through col. 5, line 10).

In the core-shell copolymers, vinyl polymers are used for the shell layer formed of the glassy resin. The vinyl polymers are obtained by the polymerization or copolymerization of at least one monomer selected from aromatic vinyl monomers, cyanided vinyl monomers, methacrylic ester monomers and acrylate ester monomers. In general, these rubber and shell layers of the core-shell copolymers are bonded through graft copolymerization. This graft copolymerization is carried out, if necessary, by adding a graft crosslinking agent reacting with the shell layer in the polymerization of rubber layer, providing reactive groups to the rubber layer, and allowing the shell layer to form (col. 7 line 57 through col. 8, line 2).

Watanabe discloses that a number average molecular weight of the epoxy group-containing ethylene-copolymer ranges from 5,000 to 600,000 and preferably from 10,000 to 500,000 and the distribution of molecular weight [ratio of the weight average molecular weight (Mw) to the number average molecular weight (Mn) (Mw/Mn)] is **10 or less**. The molecular structure of the block copolymers can be straight chain, branched chain or radical structures, or include all arbitrary combinations of these structures (col. 5, lines 46-54).

Thus, the weight average molecular weight of Watanabe would read on the claimed range because it only needs simple mathematical skill for one ordinary skilled in the art to calculate the weight average molecular weight of Watanabe.

Watanabe does not disclose that the composition does not contain α -olefins.

Lane discloses a multiple stage polymer having a rubbery first stage and an epoxy functional hard final stage, a method for improving the notched Izod impact strength and melt strength of poly(alkylene terephthalates), compositions comprising poly(alkylene terephthalates) and the multiple stage polymer, and articles molded therefrom (abstract).

Lane discloses the composition, which does not contain α -olefins but contains **n-butyl acrylate, methyl metacrylate, glycidyl methacrylate** and allyl methacrylate in the claimed weight ratio (Example 5, col. 6, lines 17-25). Additionally, the examples 1-4 contain 1,3-butylene diacrylate (col. 5 and 6). Therefore, all these examples can be used to achieve a positive result with or without α -olefins in the composition.

Both references are analogous art because they are from the same field of endeavor concerning the thermoplastic polyester resin composition made from different monomers.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate components without α -olefins which contain only alkyl methacrylates and epoxy-containing monomers as taught by Lane into the thermoplastic polyester resin composition of Watanabe because all these groups of components can be used to achieve a positive result with or without α -olefins in the composition, and thus to arrive at the subject matter of claims 1-3 and 6-7.

5. With regard to the limitations of claims 4 and 5, Watanabe discloses that the compositions can be applied to various processes for molding and formed into various molded articles. That is, the compositions are suitably applied not only to injection

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molding (insert molding) but also to extrusion molding, blow molding (various hollow articles), vacuum forming and compression molding. They are in particular suitable for molded products having any one of a metal insert, a press-fit member and a screwed part, or a weld part, the molded article being used in places, contacting with water, alkali, etc. under stress (col. 11, lines 51-60). The compositions and molded articles have very excellent long-term durability to alkaline solutions and can be suitably used in a wide variety of the fields such as electric, electronic, automobile and general merchandise fields (col. 12, lines 23-27).

Thus, the combination of Watanabe and Lane renders all instant claims *prima facie* obvious in view of absent of unexpected results commensurate in scope of claims.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Conclusion

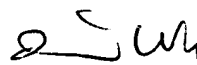
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
Patent Examiner
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04/12/2006


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